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Glucose-Intolerance and Dyslipidaemia Independently Predict Mortality: The Hoorn Study.

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Glucose-intolerance and dyslipidaemia are related abnormalities, and both associated with increased mortality. However, is the combination of glucose-intolerance and dyslipidaemia associated with higher mortality? We studied the association of glucose-intolerance, triglyceride-levels (TG) and HDL-cholesterol (HDL) with mortality in a population-based cohort study of 2484 men and women, aged 50 to 75 years, with a follow-up duration of six years.

Causes of death of the deceased (n= 177) were retrieved by reviewing the medical records, and classified according to ICD-9. Relative Risks (RR) were estimated by Cox proportional hazards regression models. All models were adjusted for age and sex. Lipid categories were defined as `favourable' (top HDL-tertile and lowest TG-tertile), `unfavourable' (lowest HDL-tertile and top TG-tertile) or `intermediate' (other combinations).

In 168 out of 177 the cause of death could be retrieved. Glucose-intolerance and lipid categories were independent risk factors for mortality. Increased mortality could be attributed to ischaemic heart disease (IHD) and sudden death (SD). Of interest was that no significant interaction between lipids and glucose-tolerance was found.

RR (95% CI) compared to NGT and `intermediate' lipid group (1 model)

		IGT	NDM¶	Known DM	Favourable	Unfavourable
Mortality	(n)	(254)	(118)	(87)	(464)	(435).
Total	(175)	1.1(0.7-1.8)	1.7(1.0-2.9)	3.1(1.9-5.1)	0.7(0.4-1.1)	1.3(0.9-3.8)
IHD+SD*	(49)	1.5(0.6-3.5)	3.0(1.3-7.1)	4.7(2.0-11.0)	0.8(0.3-2.0)	1.4(0.7-2.7)

¶ Newly diagnosed DM at baseline. *ICD-9 codes 410-414, 427.4, 427.5, 798.

We conclude that in a general caucasian population, abnormal glucose-tolerance and dyslipidaemia (high TG and low HDL) are independent predictors of mortality due to IHD and SD.

0549

The Use of Automated Data to Evaluate the Complication Burden of Diabetes in a Managed Care Setting.

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Complications of diabetes are a major burden to patients and health care systems. We developed a unique algorithm to identify and track complications using ICD-9-CM and CPT-4 procedure codes, laboratory data, and pharmacy data, at Group Health Cooperative of Puget Sound (GHC), a large, staff-model HMO in Washington State. Eight major complications were defined: hypertension, ischemic heart disease, cardiovascular disease, peripheral vascular disease, foot ulcer, renal disease, eye disease, and neuropathy. We evaluated the change in complication burden over time among a cohort of 14,423 diabetics aged ≥ 18 years who were continuously enrolled at GHC from 1992-95. Patients were lost to the cohort only through death: 631 in 1993, 626 in 1994, and 566 in 1995. Prevalent complications increased rapidly; the proportion of complication-free patients was 35.5% in 1993 and only 20% by 1995 while the proportion of patients with 5 to 8 complications increased from 2.6% in 1993 to 5.7% in 1995. Incident complications were defined as those identified in 1993-1995 but not present in 1992. Of 5126 patients free of complications in 1993, 27.7% acquired 1 complication, 11.9% 2-3 complications and 4.1% 4-6 complications by 12/31/95. The most commonly acquired incident complications were: hypertension (18.1%), renal disease (11.4%) and ischemic heart disease, (9.2%).

In conclusion, complications accrued rapidly among diabetics in this HMO setting. This algorithm, that employs automated data, is an efficient method for tracking complications, and may prove to be a valuable tool for evaluating the effectiveness of prevention and treatment strategies, and complication-related costs.

0550

Association of Behavioral Risk Factors and Glucose Intolerance in Native Hawaiians.

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Native Hawaiians (NHs) have an increased prevalence of NIDDM and diabetes risk factors. Although the etiology of this increased risk is not well understood, many studies have supported the role of lifestyle/behavioral risk factors in similar at-risk populations. IN the NHHR Project, an epidemiological study on DM and heart disease risk factors in NHs, the association of behavioral risk factors (dietary intake and physical activity) with abnormal glucose tolerance (all DM and IGT) were examined. Three-hundred-fifty-one NHs (43% men) with a mean age of 48 y.o. completed a 2-hr OGTT, research interview and examination. Dietary intake and physical activity were measured by questionnaires previously validated for use in NHs. The mean daily dietary intake for the entire cohort was 2497 kcal ± 1249 (SD) consisting of 54% CHO, 31% fat, 15% protein and 22 gms fiber. The mean level of physical activity was 24 ± 35 (SD) kcal/kg-wk and was highly skewed to sedentary levels. To correct for skewedness participants were ranked by quartiles of physical activity. Using logistic regression, we found the lowest quartile of physical activity, adjusted for age, significantly associated with abnormal glucose tolerance (GT) compared to NHs with normal GT (p=0.01). In contrast, using linear regression, we found no significant differences between GT status and age-adjusted dietary factors such as daily caloric intake, % calories from fat, total carbohydrates or daily fiber intake (p>0.64).

In summary, sedentary levels of physical activity were associated with abnormal GT in NHs. However, no significant differences were found between dietary factors and GT status. These findings suggest that physical inactivity rather than dietary intake may be more important as a modifiable risk factor for NHs with abnormal glucose tolerance.

0551

Demographics of Relatives Screened and ICA Positive in the Diabetes Prevention Trial-Type I Diabetes (DPT-1).

DPT-1 STUDY GROUP. *Nationwide, USA*

The DPT-1 is a nationwide study designed to determine whether insulin based therapies can delay or prevent the clinical onset of Type I diabetes in relatives of patients with established disease found to be at high risk of diabetes development. Parenteral insulin is used in relatives with >50% projected 5-year risk. Oral insulin is used in relatives with 26-50% projected 5-year risk. Screening for islet cell antibodies (ICA) began in February 1994. By November 30, 1996, there were 40,381 samples which had been received and analyzed for ICA. The age and gender distribution of subjects tested is as follows:

Age	Female	Male	Unknown	Total
0-9	5677	6268	3	11948
10-20	6455	6355		12810
21-45	10434	5189		15623
Total	22566	17812	3	40381

Rates of ICA positivity are:

Age	Female	Male	Total
0-9	3.3%	4.0%	3.7%
10-20	3.2%	4.5%	3.9%
21-45	2.6%	3.6%	2.9%
Total	3.0%	4.1%	3.4%

In terms of ethnicity, of subjects screened, 83.7% were non-Hispanic White, 8.2% were Hispanic, 2.5% were non-Hispanic Black, 0.8% were Asian or Pacific Islander, and 0.2% were native American Indian or Alaskan. Rates of ICA positivity were: 3.6% for non-Hispanic Whites, 2.3% for Hispanics, 3.4% for non-Hispanic Blacks, 2.2% for Asian or Pacific Islanders, and 1.0% for native American Indian/Alaskans. The rates of ICA positivity vary only slightly amongst different age, gender, and ethnic groups. Differences may be accounted for either by ascertainment bias or real biological variation.

ADA Funded Research

A numeral beside an author's name indicates a duality of interest. See Duality of Interest Information beginning on page lxxxvii.